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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/863,002

05/22/2001

Bernd Kleemann

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10/22/2002

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EXAMINER

AMARI, ALESSANDRO V

ART UNIT

PAPER NUMBER

2872

DATE MAILED: 10/22/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/863,002

Applicant(s)

KLEEMANN ET AL.

Examiner

Alessandro V. Amari

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2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 July 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3-6, 10-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Staunton U.S. Patent 3,045,532.

In regard to claim 1, Staunton discloses (see Figure 2) a grating with a multiplicity of parallel diffraction, structures succeeding one another periodically (1, 1', 1''), which are arranged on a support defining a base area and each incorporate a blaze flank (1-2) inclined towards the base area substantially at an angle (inherently, there is an angle of incident light which will satisfy the Littrow condition for the grating) and a counterflank (2,3), wherein the blaze flank and the counter-flank form at the apex of a diffraction structure an apex angle which is less than 90° as can be seen at the top of the element 1', characterised in that the counter-flank comprises at least two substantially plane area sections (2-3, 3-1') as described in column 3, lines 12-14 which, bordering one another and inclined relative to one another by an angle of inclination extend parallel with the extension direction of the diffraction structure as shown in Figure 2, wherein due to the inclination of the at least two area sections relative to one another the counter-flank all in all exhibits a concave surface viewed from the light incidence side as described in column 3, lines 12-14, and in that region of the counter flank where the two

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substantially plane area sections meet, is lower than the lowest area of the blaze flank as shown in Figure 2 where the element 3' is lower than 2'. Staunton does not explicitly label his device Littrow. However, as illustrated above, the reference teaches all of the structure required by the claim in support of such a label. Thus, the structure of the reference must inherently support the label in the same manner as the structure of the claim.

Regarding claim 3, Staunton discloses that the angle of inclination ( $\beta$ ) lies in the range from  $90^\circ$  to  $150^\circ$  as can be shown (see angle between 2-3, 3-1') in Figure 2.

Regarding claim 4, Staunton discloses that the grating consists of quartz glass as described in column 4, lines 67-69.

Regarding claims 5 and 6, Staunton discloses that the grating comprises a coating increasing the reflectivity in that the coating is an aluminum coating as described in column 2, lines 54-56.

Regarding claim 10, Staunton discloses that the blaze flank comprises, measured normal to the extension direction of the diffraction structures, a minimum width of  $g \cos(\theta)$ , where  $g$  designates the grating period of the grating and  $\theta$  the Littrow angle. Inherently, there will be some grating period and angle, which satisfies the Littrow condition and the minimum width limitation for the blaze flank.

Regarding claim 11, Staunton discloses the use of a grating in a diffraction order of the incident light wavelength above or equal to the 15th diffraction order. Inherently, one can have an incident light wavelength above or equal to the 15th diffraction order, which satisfies this limitation.

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Regarding claim 12, Staunton discloses the use of a grating for the diffraction of UV light with a wavelength that is less than 250 nm as described in column 1, lines 42-44 and column 2, lines 9-12.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Staunton U.S. Patent 3,045,532.

Regarding claim 2, Staunton teaches the claimed invention except that the area sections exhibit a width ratio of 0.5 to 2 measured normal to the extension direction of the diffraction structures. It would have been obvious to one having ordinary skill in the art at the time the invention was made to manufacture the grating such that the area sections exhibit a width ratio claimed, since it has been held that where general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

5. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Staunton U.S. Patent 3,045,532 in view of Tomono U.S. Patent 5,629,804.

Regarding claims 7 and 8, Staunton teaches the invention as set forth above but does not teach a dielectric layer system, which comprises layers of  $\text{Al}_2\text{O}_3$  and  $\text{MgF}_2$ . Tomono teaches a dielectric layer system which comprises layers of  $\text{Al}_2\text{O}_3$  and  $\text{MgF}_2$  as

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described in column 5, lines 66-67 and column 6, lines 1-2. It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the dielectric layer system as taught by Tomono in the grating of Staunton in order to improve the transmissivity of the grating.

6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Staunton U.S. Patent 3,045,532 in view of Tomono U.S. Patent 5,629,804 and further in view of Urino U.S. Patent 4,991,937.

Regarding claim 9, the combination teaches the invention as set forth above but does not teach that the dielectric layer system comprises layers of  $\text{LaF}_3$  and  $\text{MgF}_2$ . Urino teaches the dielectric layer system comprises layers of  $\text{LaF}_3$  and  $\text{MgF}_2$  as described in column 3, lines 1-10. It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the dielectric layer system as taught by Urino in the combination in order to improve the transmissivity of the grating.

### ***Response to Arguments***

7. Applicant's arguments filed 31 July 2002 have been fully considered but they are not persuasive.

The Applicant argues that the reference, Staunton fails to show a counter flank having at least two substantially plane area sections. The Applicant argues that the Examiner has mislabeled the elements in the references and that the plane 1'-3 does not comprise a blaze flank, but instead comprises a counter-flank, with planes 1-2 and 2-3 comprising the blaze flanks whereas the claimed invention has a single plane blaze

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flank located at a Littrow angle (75 degrees for the grating period D and light of a wavelength of 193.35 nm), and a bipolar counter flank.

In response to this argument, the Examiner directs the Applicant's attention to his specification (page 1, lines 15-19) which states "an apex angle  $< 90$  degrees results in a counter flank, which is not exposed to light during the operation of the Littrow grating, being distanced from the path of the light beams impinging on the blaze flank." If one examines figure 2 of Staunton, the apex angle is less than 90 degrees and it is therefore possible for light which clears the apex (1 or 1' or 1" in figure 2) to impinge upon the plane 1-2 (i.e., flank) and not the planes 2-3, 3-1' and thus the planes 2-3, 3-1' can be described as a counterflank as per the definition given in the Applicant's specification. Furthermore, in the Littrow condition, the grating equation becomes  $m\lambda = 2d\sin\alpha$  so that  $\sin\alpha = m\lambda/2d$ . It is clear that for the grating of Staunton, given that d (or period) will be fixed, there will be some diffraction order and wavelength which will equal the  $\sin\alpha$  (incident angle) and thus satisfy the Littrow condition.

### ***Conclusion***

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alessandro V. Amari whose telephone number is (703) 306-0533. The examiner can normally be reached on Monday-Friday 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on (703) 308-1687. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

ava *ava*  
October 17, 2002



**Cassandra Spyrou**  
Supervisory Patent Examiner  
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